AMENDMENTS TO THE CLAIMS

1. (Canceled)

2. (Currently Amended) The device according to claim [[1]] 46, wherein the stimulator is at least one component selected from the group comprising a display screen, a pair of shutter-equipped eyeglasses, a loud speaker, headphones, a pressure generator and a time modulated laser.

3. (Currently Amended) The device according to claim [[1]] 46, wherein the sensor ~~means for detecting brain activity~~ is at least one component selected from the group comprised of a scalp EEG electrode [[or]] and a MEG electrode.

4. (Currently Amended) The device according to claim [[1]] 46, wherein the sensor is coupled to ~~means for detecting brain activity is connected with~~ the control unit via an isolating amplifier.

5. (Currently Amended) The device according to claim [[1]] 46, further comprising an input configured to receive feedback from the patient ~~means connected to the control unit for feeding back a patient reaction~~.

6. (Currently Amended) The device according to claim [[1]] 46, wherein the sensor is further configured to evoke ~~further comprising means for evoking~~ physiological and/or pathological brain activity .

7.-8. (Canceled)

9. (Currently Amended) The device according to claim [[8]] 46, wherein the control unit is further configured to quantify ~~means for quantifying the neuronal activity is a means for quantifying~~ the amplitude of the power spectrum over the plurality of excitation frequencies and to quantify ~~excitation frequency range or a means for quantifying~~ the instantaneous amplitude of the plurality of excitation frequencies ~~frequency range~~ as determined by the Hilbert transformation.

10. (Currently Amended) The device according to claim [[1]] 46, wherein the control unit is further configured to actuate ~~connected with means for actuating~~ the stimulator.

11. (Canceled)

12. (Currently Amended) The device according to claim [[11]] 46, wherein the control unit is further configured to execute ~~means for investigating the signals measured by the sensor carries out~~ a Fourier transformation or a wavelet analysis on the measured neuronal rhythmic activity.

13.-15. (Canceled)

16. (Currently Amended) The device according to claim [[14]] 46, wherein the control unit is further configured to determine ~~further comprising means for testing~~ the quality of the entrainment of the phase dynamic of the neuronal rhythmic activity.

17. (Currently Amended) The device according to claim 16, wherein the control unit is further configured to measure at least one of ~~means for testing the quality of the entrainment comprises means for determining~~ the phase dynamic ~~or the phase~~ and the amplitude of the neuronal rhythmic activity~~rhythm to be desynchronized~~.

18. (Currently Amended) The device according to claim 17, wherein the control unit is further configured to perform means for determining the phase and amplitude of the neuronal rhythm to be desynchronized carries out a Hilbert transformation or a matching of the signals of the neuronal ~~rhythm~~ rhythmic activity with a slowly changing sine function in a sliding time window.

19. (Canceled)

20. (Currently Amended) The device according to claim [[19]] 46, wherein the control unit is further configured to calculate ~~means for evaluating the phase and amplitude of the neuronal rhythm contains means for calculating~~ phase resetting curves.

21. (Currently Amended) The device according to claim 20, further comprising a display screen configured to display ~~means for visualization of~~ the phase resetting curves.

22. (Currently Amended) The device according to claim 20, wherein the control unit is further configured to quantitatively characterize calculate ~~further comprising means for the quantitative characterization of~~ the phase resetting curves.

23. (Canceled)

24. (Currently Amended) The device according to claim [[1]] 46, wherein the control unit is further configured to determine ~~further comprising means for determining~~ the vulnerable phase of the neuronal ~~rhythm~~ rhythmic activity, and wherein the stimulator is further configured to generate the desynchronization pulse at the vulnerable phase.

25. (Currently Amended) The device according to claim 24, wherein the control unit determines the vulnerable phase by ~~means for determining the vulnerable phase is a means for~~ varying the time spacing between the last excitation of the entraining periodic pulse sequence ~~entrainment~~ and the ~~desynchronizing excitation signal~~ desynchronization pulse.

26. (Currently Amended) The device according to claim 25, wherein the control unit is further configured to effect ~~means for varying the time spacing between the last excitation of the entrainment and the desynchronizing is a means which effects~~ a variation in the time spacing for different values of the intensity.

27. (Currently Amended) The device according to claim 25, wherein the control unit is further configured to increase ~~means for varying the intensity is a means for increasing~~ the intensity in equidistant steps.

28. (Currently Amended) The device according to claim 24, wherein the control unit is further configured to determine ~~further comprising means which enables from a series of test stimulations~~ optimal stimulation parameters ~~to be determined~~ based a series of test stimulations.

29. (Currently Amended) The device according to claim 28, wherein the control unit is further configured to determine ~~further comprising means which detects stimulation parameters from a series of test stimulations from which~~ a minimization of the amplitude of the neuronal rhythmic activity to be desynchronized ~~can be obtained~~.

30. (Currently Amended) The device according to claim 29, wherein the control unit is further configured to perform ~~means for determining the minimization of the amplitude of the stimulation parameters which give rise to a desynchronization of the rhythm comprises a means for carrying out the~~ a Hilbert transformation to determine the minimization of the amplitude of the stimulation parameters.

31. (Currently Amended) The device according to claim 29, wherein the control unit is further configured to match ~~means for determining the minimization of the amplitude of the stimulation parameters giving rise to a desynchronization of the rhythm comprises a means for matching~~ a slowly changing sine function to a signal of the sensor in a time window following stimulation to determine the minimization of the amplitude of the stimulation parameters giving rise to a desynchronization of the neuronal rhythmic activity.

32. (Currently Amended) The device according to claim 29, wherein the control unit is further configured to integrate ~~wherein the means for determining the stimulation parameters giving rise to a minimization of the amplitude of the desynchronizing rhythm comprises a means for integrating~~ the amplitude of the power spectrum over the frequency band of signals measured by the sensor in a time window following the stimulation to determine the minimization of the amplitude of the stimulation parameters giving rise to a desynchronization of the neuronal rhythmic activity.

33. (Canceled)

34. (Currently Amended) The device according to claim 20, wherein the control unit is further configured to evaluate the ~~further comprising means for evaluating~~ phase resetting curves to measure the desynchronized neuronal rhythmic activity~~with which the effect of the desynchronizing excitation pulse on the phase dynamics of the desynchronizing neuronal activity is investigated~~.

35. (Currently Amended) The device according to claim 34, wherein the control unit is further configured to apply ~~means for evaluating the phase resetting curves comprises a means for applying Ψ_e,~~ the phase dynamic of the neuronal rhythmic activity before stimulation over ~~, over Ψ_b,~~ the phase dynamic of the neuronal rhythmic activity after stimulation to evaluate the phase resetting curves.

36. (Currently Amended) The device according to claim 34, wherein the control unit is further configured to determine ~~means for evaluating the phase resetting curves comprises a means for determining~~ the position of the phase resetting curve at which the transition from a main rise 1 to a main rise 0 to evaluate the phase resetting curves.

37. (Canceled)

38. (Currently Amended) The device according to claim 1 wherein the desynchronization pulse follows the entraining periodic pulse sequence ~~periodic succession of pulses~~ with a predetermined time delay.

39. (Canceled)

40. (Currently Amended) The device according to claim [[39]] 46, wherein the stimulator is configured to vary the intensity of the plurality of pulses such that the control unit can ~~second control means also varies an intensity of the single pulses while monitoring with the sensor means brain activity of the patient to~~ determine an intensity at which the strongest desynchronization of pathologically rhythmic brain waves is effected.

41.-45. (Canceled)

46. (New) A device for desynchronizing pathologically rhythmic brain activity, the device comprising:

a stimulator configured to generate a plurality of pulses at a plurality of excitation frequencies, respectively, to stimulate neuronal rhythmic activity in a patient's brain;

a sensor configured to measure the neuronal rhythmic activity in response to the plurality of pulses; and

a control unit configured to determine at least one frequency of the plurality of excitation frequencies in which the measured neuronal rhythmic activity has a maximum amplitude of pathological rhythm;

wherein the control unit is further configured to control the stimulator to generate an entraining periodic pulse sequence operating at the at least one frequency to entrain the phase dynamic of the neuronal rhythmic activity,

wherein the stimulator is further configured to generate a desynchronization pulse following the entraining periodic pulse sequence to desynchronize the neuronal rhythmic activity, and

wherein the plurality of pulses, the entraining pulse sequence and the desynchronization pulse are either visual or acoustic or tactile.

47. (New) The device according to claim 46, wherein the plurality of pulses range between frequencies of 1 and 100 Hz.

48. (New) The device according to claim 46, wherein the sensor is further configured to measure the neuronal rhythmic activity before the stimulator generates a plurality of pulses, and wherein the control unit is configured to determine whether to perform need-controlled synchronization of the neuronal rhythmic activity of the patient's brain based on the neuronal rhythmic activity measured without stimulation.

49. (New) The device according to claim 48, wherein the stimulator is further configured to generate a periodic succession of pulses to excite the neuronal rhythmic activity of the patient's brain.

50. (New) A method for desynchronizing pathologically rhythmic brain activity, the method comprising:

generating a plurality of pulses at a plurality of excitation frequencies, respectively, to stimulate neuronal rhythmic activity in a patient's brain;

measuring the neuronal rhythmic activity in response to the plurality of pulses;

determining at least one frequency of the plurality of excitation frequencies in which the measured neuronal rhythmic activity has a maximum amplitude of pathological rhythm;

generating an entraining periodic pulse sequence operating at the at least one frequency to entrain the phase dynamic of the neuronal rhythmic activity; and

generating a desynchronization pulse following the entraining periodic pulse sequence to desynchronize the neuronal rhythmic activity,

wherein the plurality of pulses, the entraining pulse sequence and the desynchronization pulse are either visual or acoustic or tactile.

51. (New) The method according to claim 50, further comprising generating the plurality of pulses at a frequency range of 1 and 100 Hz.

52. (New) The method according to claim 50, further comprising:

determining the vulnerable phase of the neuronal rhythmic activity; and

generating the desynchronization pulse during the vulnerable phase of the neuronal rhythmic activity.

53. (New) The method according to claim 50, further comprising repeating the steps of generating the entraining periodic pulse sequence and generating thea desynchronization pulse after a predetermined time interval.

54. (New) The method according to claim 53, further comprising varying the length of the time interval between the entraining periodic pulse sequence and the desynchronization pulse while monitoring the neuronal rhythmic activity to determine an optimal time interval at which the strongest desynchronization of pathologically rhythmic brain waves of the patient is effected.

55. (New) The method according to claim 53, further comprising:

varying the intensity of each of the repeated desynchronization pulses; and

determining an intensity at which the strongest desynchronization of pathologically rhythmic brain waves is effected.

56. (New) The method according to claim 50, further comprising:

generating a continuous sequence of sensory stimulation after the desynchronization pulse; and

repeating the steps of generating the entraining periodic pulse sequence and generating the desynchronization pulse after the continuous sequence of sensory stimulation.

57. (New) The method according to claim 56, further comprising varying the length of the time interval between the entraining periodic pulse sequence and the desynchronization pulse while monitoring the neuronal rhythmic activity to determine an optimal time interval at which the strongest desynchronization of pathologically rhythmic brain waves of the patient is effected.

58. (New) The method according to claim 56, further comprising:

varying the intensity of each of the repeated desynchronization pulses; and

determining an intensity at which the strongest desynchronization of pathologically rhythmic brain waves is effected.